

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

AI, Bing

P.O. Box 1022 Minneapolis Minnesota 55440-1022 USA

PCT**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) **17 OCTOBER 2008 (17.10.2008)**

Applicant's or agent's file reference

17370-008WO1

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2008/061451

International filing date (day/month/year)

24 APRIL 2008 (24.04.2008)

Priority date(day/month/year)

24 APRIL 2007 (24.04.2007)

International Patent Classification (IPC) or both national classification and IPC

G01N 21/25(2006.01)i

Applicant

TOMOPHASE CORPORATION et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
Government Complex-Daejeon, 139
Seonsa-ro, Seo-gu, Daejeon 302
-701, Republic of Korea
Facsimile No. 82-42-472-7140

Date of completion of this opinion

17 OCTOBER 2008 (17.10.2008)

Authorized officer

PARK, Youg Ju

Telephone No.82-42-481-8566



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2008/061451

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of :

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☐ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2008/061451

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-21	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-21	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims	None	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 6687010 B1 (Akihiro Horii) 3 FEBRUARY 2004
D2: JP 2004-317437 A (OLYMPUS CORP.) 11 NOVEMBER 2004
D3: US 2005/0286055 A1 (FEILING WANG) 21 AUGUST 2007
D4: US 6134003 A (GUILLERMO TEARNEY) 17 OCTOBER 2000

1. Novelty and Inventive Step

1.1 Independent Claims 1, 14, 16

The subject matter of claim 1 differs from these prior art documents in that the optical probe head of claim 1 is operable to direct the probe light in the first/second principal polarization direction to exit the optical probe head at a first/second exit angle with respect to the sheath longitudinal direction.

The subject matter of claim 14 differs from these prior art documents in that it uses polarization deflecting optics engaged to the distal end of the fiber to separate light into a first beam in a first polarization by a first deflection angle and a second beam in a second polarization by a second deflection angle that is different from the first deflection angle.

The subject matter of claim 16 differs from these prior art documents in that it splits the probe light at the distal terminal of the fiber into a first beam in a first principal polarization of the fiber propagating at a first deviation angle with respect to the fiber and a second beam in a second principal polarization of the fiber propagating at a second deviation angle that is different from the first deviation angle.

And these are not obvious to a skilled person in the art by the documents, taken alone or in combination. Therefore, claim 1, 14, 16 meet the requirements of PCT Article 33(2) and (3) with respect to novelty and inventive step.

1.2 Dependent Claims 2-13, 15, 17-21

Since claims 2-13, 15 and 17-21 depend on claim 1, claim 14 and claim 16 respectively, all of the claims meet the requirements of PCT Article 33(2) and (3) with respect to novelty and inventive step.

2. Industrial Applicability

Since the inventions claimed in claims 1-21 can be made or used in the industry concerned, these claims have industry (Art. 33(4) PCT).

**WRITTEN OPINION OF THE
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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of :

Box V

considered to be novel and to involve an inventive step.

Claims [7-16] depend on claim [6] and consequently they are also considered to be novel and to involve an inventive step under PCT Article 33(2)-(3).

2. Industrial Applicability

Claims [1-16] are industrially applicable under PCT Article 33(4).1

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 17370-008WO1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2008/061451	International filing date (<i>day/month/year</i>) 24 APRIL 2008 (24.04.2008)	(Earliest) Priority Date (<i>day/month/year</i>) 24 APRIL 2007 (24.04.2007)
Applicant TOMOPHASE CORPORATION et al		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of :

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☐ **Unity of invention is lacking** (See Box No. III)

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1A

- ☒ as suggested by the applicant.
☐ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

b. ☐ none of the figure is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/061451**A. CLASSIFICATION OF SUBJECT MATTER****G01N 21/25(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 : G01N21/25; G01B9/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models since 1975

Japanese utility models and applications for utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS (KIPO internal): polarization, rotation, fiber

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6687010 B1 (AKIHIRO HORII) 3 FEBRUARY 2004 (See the abstract; Fig.58)	1-21
A	JP 2004-317437 A (OLYMPUS CORP.) 11 NOVEMBER 2004 (See paragraph 8)	1-21
A	US 2005/0286055 A1 (FEILING WANG) 21 AUGUST 2007 (See para. 67-68)	1-21
A	US 6134003 A (GUILLERMO TEARNEY) 17 OCTOBER 2000 (See the abstract; Fig.6)	1-21



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 OCTOBER 2008 (17.10.2008)

Date of mailing of the international search report

17 OCTOBER 2008 (17.10.2008)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/061451

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6687010 B1	03.02.2004	JP 2001-083077 JP 2001-264246	30.03.2001 26.09.2001
		US 2004-0109164 A1	10.06.2004
JP 2004-317437 A	11.11.2004	US 2004-0247268 A1	09.12.2004
US 2005-0286055 A1	29.12.2005	US 7259851	21.08.2007
US 6134003 A	17.10.2000	DE 69227902 D1 EP 0581871 B1 EP 0883793 B1 JP 06-511312 JP 2000-503237 JP 2002-214127 JP 2004-105708 JP 3692131 B2 US 5321501 US 5459570 US 5465147 US 5956355 US 6111645 US 6160826 US 6282011 US 6421164 US 6485413 US 6501551 US 2001-0036002 A1 WO 92-19930 A1 WO 95-33970 A1	28.01.1999 16.12.1998 14.11.2007 15.12.1994 21.03.2000 31.07.2002 08.04.2004 07.09.2005 14.06.1994 17.10.1995 07.11.1995 21.09.1999 29.08.2000 12.12.2000 28.08.2001 16.07.2002 26.11.2002 31.12.2002 01.11.2001 12.11.1992 14.12.1995